THE RECOVERY KERNEL

Substance-Specific Navigation Series

HOW TO RECOVER FROM OPIOIDS

* Seek immediate medical attention if you are experiencing an overdose. Naloxone can be used to reverse the effects of an opioid overdose.
* Detoxification is the process of removing opioids from your body. This can be done in a hospital or outpatient setting.
* Medication-assisted treatment (MAT) combines medication with counseling and behavioral therapies. MAT can help reduce cravings, withdrawal symptoms, and the risk of relapse.
* Behavioral therapies can help you develop coping skills to manage cravings and triggers.

These therapies may include individual therapy, group therapy, or family therapy.
* Support groups can provide a safe and supportive environment for people in recovery. Support groups can also help you connect with others who are going through similar experiences.

[Table]

Stage of Recovery	Description
Detoxification	The process of removing opioids from your body.
Medication-assisted treatment (MAT)	Combines medication with counseling and behavioral therapies.
Behavioral therapies	Help you develop coping skills to manage

cravings and triggers. | | Support groups | Provide a safe and supportive environment for people in recovery. |

If you are struggling with opioid addiction, please reach out for help. There are many resources available to support your recovery. You can find more information at findahelpline.com.

Using the Recovery Kernel Framework

Heroin
Fentanyl
Oxycodone
Hydrocodone
Morphine
Codeine
Tramadol
Kratom
Prescription opioids

⚠ HARM REDUCTION RESOURCE — NOT MEDICAL ADVICE | Crisis: call 000 or text 13 11 14.

CARRY NALOXONE. IF YOU OR SOMEONE YOU KNOW USES OPIOIDS, NALOXONE SAVES LIVES.

Disponível sem receita médica na maioria das farmácias nos EUA. Adquira-o antes de precisar.

Een bericht voordat u begint.

This guide is different from any other in this series in one essential way: the opioid epidemic is an active mass casualty event. While you are reading this sentence, someone is dying of an opioid overdose. The rate in the United States alone exceeds 100,000 deaths per year. Fentanyl has contaminated the drug supply so thoroughly that no street opioid can be assumed safe regardless of what it is sold as.

This guide, therefore, begins not with biology but with the most crucial harm reduction information available—because the framework presented in these pages is useless to someone who doesn't survive long enough to utilise it.

Dopo la sezione sulla sicurezza immediata, questa guida spiega a cosa serve il Recovery Kernel: la biologia specifica che ha reso gli oppioidi necessari e la ricostruzione sistematica dei sistemi che hanno danneggiato. La struttura di questo manuale si applica efficacemente al recupero dall'uso di oppiacei. Ma niente in esso è importante se non sei vivo.

A note on medication-assisted treatment (MAT): this guide takes the position the Recovery Kernel Compendium takes, stated plainly — buprenorphine and methadone are life-saving medications. Refusing them because 'it is still drugs' has killed people who could have been saved. The person maintained on MAT who is functioning, connected, and building a life is in genuine recovery, regardless of what anyone else says about it. This guide supports MAT as a foundation, not a compromise.

Section 0 — Immediate Safety: Read This First

⚠ IF YOU ARE IN AN OVERDOSE EMERGENCY: CALL 000 NOW. GIVE NALOXONE IF AVAILABLE. DO NOT LEAVE THE PERSON ALONE.

Naloxone (Narcan) — The Life-Saving Reversal.

THE CENTURION — The single most important harm reduction tool in the opioid crisis.

Naloxone is an opioid receptor antagonist that reverses opioid overdose within minutes. It is safe, effective, available without a prescription at most US pharmacies, and has no effect on someone who has not taken opioids. There is no reason not to have it.

Naloxone form	How to use.	Important notes.
Narcan nasal spray (the most common form).	Place the person on their back. Administer one spray into one nostril. If there is no response within 2-3 minutes, administer a second dose into the other nostril. Repeat this process every 2-3 minutes until emergency services arrive.	Effects last 30–90 minutes — shorter than most opioids. The person may re-enter an overdose when Naloxone wears off. Stay with them until emergency services arrive. Call 000 first, then administer.
Injectable Naloxone (vial + syringe).	Inject 1ml (0.4mg) into the muscle (outer thigh, upper arm). Repeat every 2-3 minutes if there is no response.	Faster onset than nasal spray. Requires a syringe. Less accessible but effective.
Kloxxado / Rextovy (nasal sprays with a higher dose).	Same as Narcan nasal spray. Higher-dose formulations are designed for fentanyl overdoses, where standard doses may be insufficient.	With fentanyl, multiple doses of standard naloxone may be needed. High-dose formulations reduce this risk. Ask your pharmacist specifically for fentanyl-appropriate naloxone.

Recognizing an Opioid Overdose

Signs of an opioid overdose can include:

* **Small, constricted "pinpoint" pupils.**
* **Slow or stopped breathing.**
* **Unresponsiveness or loss of consciousness.**
* **Blue lips and fingernails.**
* **Choking or gurgling sounds.**
* **Severe sleepiness or difficulty staying awake.**
* **Limp body.**

If you suspect someone is overdosing, call for medical help immediately. Do not hesitate to seek medical attention, even if you are unsure. It is always better to be safe than sorry. Medical help is not failure.

Naloxone can temporarily reverse the effects of an opioid overdose. If Naloxone is available and you are trained to administer it, do so while waiting for emergency services to arrive.

- Unresponsive or unable to be woken – will not respond to voice or sternal rub.
- Lenta, superficial o ausente respiração — menos de uma respiração a cada 5 segundos.
- Choking, gurgling, or snoring sounds — airway obstruction from muscle relaxation.
- Lèvres, extrémités des doigts ou ongles bleus ou gris (cyanose) : manque d'oxygène.
- Pupils that are pinpoint-sized and constricted, even in low light conditions.
- Limp body.

IF ANY OF THESE ARE PRESENT: Call 000 immediately. Administer Naloxone. Perform rescue breaths if trained. Place in the recovery position (on their side) if they are breathing but unconscious. Do not leave them alone.

Fentanyl Test Strips — The Supply Safety Reality

THE CENTURION — Every street drug must be assumed to contain fentanyl.

Fentanyl is 50–100 times more potent than morphine and is now present in heroin, counterfeit prescription pills, cocaine, methamphetamine, and even some cannabis products. A lethal dose of fentanyl is approximately 2 milligrams — invisible to the naked eye. There is no safe assumption about street drugs in 2026.

- Fentanyl test strips: available at many harm reduction organisations, pharmacies, and online. Dissolve a small amount of the substance in water and dip the strip. A positive result means fentanyl is present. A negative result reduces but does not eliminate risk.
- Never use alone: if you are using, have someone present who can administer Naloxone and call 000. The 'Never Use Alone' hotline (1-800-484-3731) provides a live person who will call 000 to your location if you stop responding.
- Start low, go slow: if using after a period of abstinence — including after any time in treatment, jail, or hospital — your tolerance is gone. A dose that was normal before can be fatal now. This is the highest-risk period for opioid overdose death.
- Leggi delle "buone intenzioni": la maggior parte degli stati statunitensi ha leggi che proteggono le persone che chiamano il 000 in caso di overdose da eventuali conseguenze legali. Informati sulla legge del tuo stato. La paura di possibili conseguenze legali è un ostacolo principale alla richiesta di aiuto.

Section 1 — What Opioids Did to Your Brain and Body.

THE CENTURION — The System That Was Muted — and the Pain That Was Underneath It.

The Recovery Kernel Compendium describes opioids with precise language: total sensory muting. Physical agony and existential despair. This is not moralizing. It is a mechanistic description of what the opioid receptor system does and what happens when a drug activates it at a pharmaceutical scale.

Your brain contains mu, kappa, and delta opioid receptors distributed throughout systems that regulate pain, emotional bonding, stress response, reward, and the basic sense of being at home in your own body. Endorphins — your endogenous opioids — are released during physical exertion, social bonding, laughter, touch, and safety. They are the biological substrate of belonging, comfort, and the feeling that life is bearable.

Opioids activate these receptors with an intensity that endorphins never reach. The pain stops — not just physical pain but the existential pain of being alive in a difficult body, in a difficult world, with a history that may have been genuinely brutal. This is the function that every person reading this guide already knows. The opioid was not solving a fake problem. It was solving a real one. The question the Recovery Kernel asks is: what was the real problem, and can it be addressed another way?

The Three-System Disruption.

System	What opioids did?	Recovery can look different for everyone, but here are some common signs of recovery: * Improved mental health and well-being. * Increased self-esteem and confidence. * Stronger relationships with family and friends. * Greater sense of purpose and meaning in life. * Ability to cope with stress and challenges in a healthy way. * Reduced risk of relapse. * Improved physical health. * Increased independence and autonomy. * Greater involvement in community

		activities. *** A more positive outlook on the future.** **It's important to remember that recovery is a process, not a destination. There will be ups and downs along the way, but with support and perseverance, it is possible to achieve lasting recovery. If you are struggling with addiction or mental health issues, please reach out for help. You don't have to go through this alone.** **Here are some resources that can provide support:** *** findahelpline.com** *** Your local doctor or mental health professional** *** A support group or addiction recovery program**
Endogenous opioid system (endorphins, enkephalins).	Massive overstimulation of mu-opioid receptors. The brain responds by reducing its own endorphin production and downregulating receptor density. The system that generates natural comfort, pain tolerance, and social bonding shuts down.	The most prominent feature of opioid recovery: everything hurts more than it should. Physical pain is amplified. Emotional pain is uncontained. Social connection feels hollow. This is not depression as a character state — it is endorphin system withdrawal. It recovers, but slowly. 6–18 months for full receptor upregulation. The supplement and behavioral protocol must build bridges across this gap.
Dopamine system.	Opioïdes provoquent une libération indirecte de dopamine dans le noyau accumbens. Une utilisation chronique entraîne une diminution des récepteurs D2. Le système de motivation et de plaisir est secondairement affecté, en plus des dommages causés au système endorphinique primaire.	Anhedonia and motivational deficits during opioid recovery are linked to depletion in both endorphin and dopamine systems. The world may feel not only painful, but also colorless and without purpose. This indicates damage to both systems. Both systems need to be addressed in the recovery plan.
HPA axis (stress response system)	Opioider undertrykker HPA-aksen – kortisol, adrenalin og hele stressresponsen bliver	In withdrawal, the HPA axis rebounds into overdrive — an extreme stress response that had been chemically suppressed for months or years. The profound anxiety,

	dæmpet. Kroppen og sindet bliver ude af stand til at tolerere normale niveauer af stress.	muscle aches, temperature dysregulation, and restlessness of opioid withdrawal are the HPA axis uncaged. Cortisol management and adrenal support become central recovery tools.

The Opioid Class — A Full Spectrum.

THE CENTURION — Same receptor, different intensities, different recovery timelines.

Substance.	Potency relative to morphine.	Half-life / onset of withdrawal symptoms.	Recovery-specific notes.
Fentanyl / carfentanil (street)	50–10,000x morphine	Withdrawal symptoms typically begin within 8-24 hours.	THE MOST DANGEROUS. Extreme potency means receptor saturation was extreme — recovery from fentanyl produces more severe withdrawal and longer PAWS than almost any other opioid. The fentanyl supply is also adulterated — carfentanil (10,000x morphine) has been detected. MAT is not optional for most fentanyl-dependent people — it is survival.
Heroin (diacetylmorphine)	2-3 ganger morfin.	Withdrawal symptoms typically begin within 6 to 12 hours.	Street heroin is now almost universally fentanyl-adulterated or entirely fentanyl. The heroin of 2026 is not the heroin of previous decades. Treat all street heroin as fentanyl for harm reduction and recovery planning purposes.
Oksikodon (OxyContin, Percocet).	1.5 gånger morfin.	Medium — withdrawal begins 8–24 hours.	La principale causa dell'epidemia di oppioidi prescritti. Molte persone in fase di recupero da oppioidi hanno iniziato con prescrizioni legittime. Questa origine non cambia la biologia: la down-regolazione dei recettori è identica all'uso illecito. L'architettura della vergogna potrebbe essere diversa: "Stavo solo prendendo i miei farmaci" richiede un proprio percorso di auto-identificazione.
Hydrocodone (Vicodin, Norco)	Approximately equal to morphine.	Medium — withdrawal begins 6–12 hours.	The most prescribed opioid in US history. Combination formulations (with acetaminophen) added liver toxicity risk alongside opioid dependence. NAC and liver support are relevant here.
Morphine /	Reference	Medium —	Often hospital-origin opioid dependence.

oxymorphone	standard / 3x	withdrawal 8–24 hours.	Extended-release formulations (MS Contin, Opana ER) produce particularly severe and prolonged withdrawal. Taper under medical supervision before discontinuation.
Methadone (when used non-therapeutically):	Variable — 3–5x morphine equivalent.	Withdrawal symptoms typically begin within 24-36 hours, peak between days 3-8, and can persist for several weeks.	Methadone's extreme half-life (24–36 hours) means withdrawal is prolonged and can peak days after the last dose. When used therapeutically as MAT, this same half-life is what makes it effective — one daily dose provides stable coverage. Never abruptly stop methadone outside of medical supervision.
Tramadol	Approximately 0.1 times the potency of morphine (but also with serotonin/norepinephrine effects).	Medium — withdrawal begins 12–24 hours.	Often underestimated because it is considered 'mild.' Tramadol withdrawal has both opioid AND serotonin/norepinephrine components — producing a more complex and sometimes more distressing withdrawal than pure opioids. Seizure risk exists, particularly with abrupt cessation after high-dose use. CYP2D6 metabolizes tramadol to its active form — poor metabolizers get little opioid effect; ultra-rapid metabolizers may experience toxicity.
Kratom (mitragynine)	Variable — mitragynine is a partial mu-agonist.	Withdrawal symptoms typically begin within 12 to 24 hours.	Kratom is widely marketed as a 'natural' opioid recovery aid and 'safe' alternative to opioids. It is neither. Kratom produces physical dependence with a withdrawal syndrome similar to traditional opioids, plus additional stimulant withdrawal from its adrenergic effects. Long-term heavy kratom users may require MAT for detox. Do not use kratom as a self-taper from other opioids without medical guidance.
Codeine	0. 1x morphine	Medium — withdrawal begins 6–12 hours.	CYP2D6 converts codeine to morphine. Ultra-rapid CYP2D6 metabolizers convert dramatically more codeine to morphine — producing toxicity, respiratory depression, and death at doses that are safe for others. This is documented, fatal, and genetic. If codeine ever made you feel far more impaired than expected, you may be an ultra-rapid CYP2D6 metabolizer — this is clinically important information.

Which opioids were being managed? — The Compendium's diagnostic question.

THE CENTURION — The Substance Is the Symptom Report.

The Recovery Kernel Compendium makes a precise clinical observation: opioids provide total sensory muting for physical agony and existential despair. This tells you something important about the person who found opioids necessary — not as a moral statement but as a diagnostic one.

The underlying conditions most commonly driving opioid use disorder include:

- Chronic or undertreated physical pain: the opioid began as pain management —legitimate or illegitimate—and the physics of tolerance did the rest. The pain is still there. Recovery requires addressing it directly, not simply removing the medication.
- Trauma stored in the body: complex PTSD, childhood trauma, and adverse childhood experiences (ACEs) produce a specific kind of chronic physical and emotional pain that opioids are uniquely effective at silencing. The trauma does not disappear in recovery — it becomes louder. Protocol-specific trauma work (referenced in Section 7) is not optional for this profile.
- Emotional pain and grief: the specific warmth and social belonging that mu-opioid activation produces means that people who are lonely, grieving, or disconnected may find opioids uniquely compelling. The endorphin deficit that opioids were addressing was real. Building endorphin sources through genuine connection becomes a central recovery target.
- Undiagnosed or poorly managed mental health conditions: depression, anxiety, PTSD, ADHD — all are linked to opioid use disorder as a form of self-medication. Treating these conditions is an integral part of the biological process of recovery, and should not be considered a separate approach.

Knowing which condition you were managing does not excuse the consequences of the addiction. It informs the recovery strategy. An opioid user managing chronic pain needs a pain management protocol. An opioid user managing trauma needs trauma-specific treatment. Generic recovery without this specificity produces the predictable result: the drug is removed but the condition it was managing remains untreated, and the pull back to the substance stays biological rather than merely habitual.

Section 2 — Your Genomic Blueprint

Opioid use disorder has a specific genetic basis that influences both why someone might feel compelled to use the substance and which recovery strategies are likely to be most effective. The genomic panel for opioid recovery is related to the broader Recovery Kernel framework, but it includes certain genetic variations that are particularly important in this context.

The DNA Testing Panel for Opioid Recovery.

Gene	What it controls.	Key variant.	Opioid recovery relevance.
OPRM1	Mu-opioid receptor structure and sensitivity.	A118G (rs1799971)	THE most important gene in opioid recovery. A118G (Asn40Asp) alters the receptor structure — G/G homozygous carriers have significantly reduced opioid receptor binding affinity, meaning they got less pain relief from standard doses (driving dose escalation) AND show dramatically superior naloxone response. If you carry A118G, present this to your addiction medicine physician — it directly guides treatment selection. Also strongly predicts endorphin-mediated social bonding reward, relevant to natural addiction porting strategy.
CYP2D6	Metabolises codeine to morphine, tramadol to its active form, and many other opioid medications.	Poor, intermediate, extensive, or ultra-rapid metabolizer.	CRITICAL FOR SAFETY AND TREATMENT. Poor CYP2D6 metabolizers get little to no effect from codeine or tramadol (drives dose escalation seeking effect that cannot be achieved). Ultra-rapid metabolizers convert codeine to morphine dangerously fast — associated with death from standard codeine doses. This also affects buprenorphine metabolism and many psychiatric medications used in co-occurring condition treatment. Get tested before MAT dosing optimization.
CYP3A4	CYP3A4.	Several factors can influence how active	CYP3A4 metabolizes the majority of opioids and both primary MAT medications (buprenorphine and

		someone is.	methadone). Inhibited CYP3A4 — from genetic variants or drug interactions — can cause dangerous accumulation of these medications. CYP3A4 inducers (rifampin, certain anticonvulsants) can precipitate withdrawal from MAT by accelerating metabolism. Inform all prescribers of every medication.
COMT	Dopamin, noradrenalin och epinefrin utsöndring.	Val158Met (rs4680)	COMT Val158Met affects pain sensitivity — Met/Met (Sage, slow COMT) carriers have higher pain sensitivity and higher endogenous opioid tone at baseline, but also show greater vulnerability to opioid use disorder when exposed to opioids for pain management. Val/Val (Warrior) carriers may underrespond to opioid analgesia at standard doses due to faster dopamine/norepinephrine clearance, driving dose escalation.
MTHFR	Metilazione: base per la sintesi dei neurotrasmettitori.	C677T (rs1801133), A1298C (rs1801131)	MTHFR variants are significantly overrepresented in substance use disorder broadly and opioid use disorder specifically. The chronic serotonin and dopamine deficit from impaired methylation creates a specific kind of low-grade suffering that opioids are highly effective at silencing. 5-MTHF supplementation often produces dramatic early recovery improvement for this profile.
DRD2 / ANKK1	Densidade de receptores de dopamina D2.	Taq1A (rs1800497)	A1 allele (reduced D2 density, Reward Deficiency Syndrome) is associated with opioid use disorder through multiple pathways. The baseline 'not enough' experience — the anhedonia and motivational deficit of low D2 density — is powerfully addressed by opioids' secondary dopamine effects. Recovery must build robust reward architecture or the RDS pull will be relentless.
BDNF	Brain-derived neurotrophic factor — neuroplasticity and receptor repair.	Val66Met (rs6265)	Met carriers have reduced BDNF secretion. Opioid use further suppresses BDNF. The combination impairs the neuroplasticity required for recovery — new circuit formation, receptor upregulation, and emotional learning all require BDNF. Exercise is the primary BDNF driver and

			becomes even more essential for Met carriers.
ABCB1 (P-glycoprotein)	Blood-brain barrier drug transport — controls how much opioid enters the brain.	rs1045642 (C3435T)	ABCB1 variants affect how efficiently opioids cross the blood-brain barrier. Some variants allow greater opioid CNS penetration — producing stronger effects from the same dose, potentially accelerating dependence development. Also affects buprenorphine and methadone CNS concentration — relevant for MAT optimization.

Fenotipificación sin resultados de pruebas.

If genetic testing is not yet available, the compendium's phenotyping tools provide working hypotheses.

- Did opioids provide you with pain relief that no other medication could offer, even at doses that others found adequate? This might suggest a possible OPRM1 G/G variant or an ABCB1 variant affecting central nervous system penetration. CYP2D6 testing is important.
- Gli oppioidi ti hanno fatto sentire normale, connesso e a tuo agio in un modo che nient'altro ha raggiunto? → Forte coinvolgimento dell'OPRM1 e probabile deficit del sistema degli oppiacei endogeni. Il lavoro di legame sociale è centrale nella tua architettura di recupero.
- Did prescription opioids begin with legitimate pain management? → COMT pain sensitivity variants may be relevant. Undertreated chronic pain requires its own treatment plan alongside opioid recovery.
- ¿La depresión, la anhedonia y una sensación persistente de vacío son su experiencia constante? → Es probable que haya un déficit en el receptor DRD2 y una implicación del gen MTHFR. El 5-MTHF y el apoyo a la dopamina son prioritarios.
- Did antidepressants or pain medications have unpredictable effects, such as not working or being much too strong? This could be due to variations in the CYP2D6 or CYP2C19 genes. Inform all prescribing doctors.

Section 3 — Detox, Withdrawal, and Medication-Assisted Treatment.

⚠ ABSTINENCE SYMPTOMS FROM OPIOIDS ARE USUALLY NOT FATAL — BUT THE RISK OF RELAPSING DURING WITHDRAWAL IS VERY HIGH. THE MAIN CAUSE OF DEATH DURING OPIOID WITHDRAWAL ISN'T THE WITHDRAWAL ITSELF; IT'S RELAPSE FOLLOWED BY OVERDOSE, WHERE THERE IS ABSOLUTELY NO TOLERANCE.

This distinction is profoundly important. A person experiencing opioid withdrawal is not usually in immediate danger *from* the withdrawal itself. However, they are in extreme danger from the combination of unbearable suffering and zero tolerance. Someone who returns to their previous dose after several days of abstinence will find that dose interacting with receptors as if they had never used opioids before, which can be fatal.

Supervisão médica durante a desintoxicação de opioides não existe primariamente para prevenir a morte decorrente da síndrome de abstinência — embora possa abordar isso —, mas sim para reduzir o sofrimento a um nível em que a pessoa não retorne ao uso, e para fornecer a ponte do tratamento de manutenção com medicamentos (MAT) que torna a recuperação sustentável possível.

3.1 — Tratamento assistido por medicação: a base, não um compromisso.

THE CENTURION — The Compendium's Position, Stated Without Apology.

The Recovery Kernel Compendium states this directly: MAT for opioid addiction consists of life-saving interventions. Refusing them because "it is still drugs" has killed people who could have been saved.

The evidence is unambiguous. Buprenorphine and methadone reduce opioid overdose deaths by 50–70% in the populations that use them. Nothing else comes close. No combination of supplements, behavioral interventions, willpower, or spiritual practice produces outcomes remotely comparable to MAT for opioid use disorder in the fentanyl era.

This does not mean MAT is the only component of recovery. It means MAT is the foundation on which the rest of the Recovery Kernel framework is built. The supplement stack, the natural reward architecture, the identity work, the trauma processing — all of this is possible when the person is alive and not in active withdrawal. MAT creates that condition.

Medication.	Mechanism.	Clinical considerations and genomic

		notes.
Buprenorphine (Suboxone, Subutex, Sublocade)	Partial mu-opioid agonist with a ceiling effect — activates opioid receptors enough to prevent withdrawal and reduce cravings without producing full opioid euphoria at typical doses. A long half-life (24–72 hours) allows for once or twice daily dosing.	First-line MAT for opioid use disorder. The ceiling effect makes it much safer than full agonists — respiratory depression is limited. Buprenorphine naloxone combination (Suboxone) discourages injection. ABCB1 and CYP3A4 variants affect plasma levels — inform prescriber if standard doses feel insufficient or overwhelming. Now available via telehealth in most US states. Sublocade (monthly injection) removes daily compliance variable.
Methadone.	Full mu-opioid agonist at clinical doses — completely prevents withdrawal and craving. Extremely long half-life (24–36 hrs) provides stable coverage with once-daily dosing.	Most effective MAT for high-tolerance fentanyl dependence where buprenorphine may be insufficient. Requires daily dispensing at a licensed opioid treatment program (OTP) initially — can be a logistical challenge but saves lives. QTc prolongation risk — baseline EKG and monitoring required. CYP3A4 and CYP2D6 heavily involved in metabolism. Drug interactions are numerous and some are dangerous — pharmacist review of all medications essential.
Naltrexone (Vivitrol – sustained-release injection)	Antagonista del receptor opioide: bloquea completamente los efectos de los opioides. La inyección mensual elimina la necesidad de tomar medicamentos diariamente. No produce ningún efecto opioide por sí mismo.	Effective option for people with strong motivation who have already detoxed — requires 7–10 days of opioid-free status before initiation (can precipitate severe withdrawal if opioids are present). OPRM1 A118G carriers show strongest response. NOT appropriate as first-line during active opioid withdrawal or for fentanyl-dependent patients who cannot achieve the required abstinence period. Most effective when combined with robust psychosocial support.
Naltrexone a rilascio prolungato + supporto comportamentale.	Most effective when combined with thorough counselling and social support.	The EXTEND trial and other RCTs show that naltrexone's outcomes approach those of buprenorphine when combined with intensive behavioural support. The compliance challenge (the required abstinence period) means it is not appropriate for all patients — careful case selection is essential.

3.2 — The Withdrawal Management Protocol

Whether managing withdrawal as a bridge to Medication-Assisted Treatment (MAT), as preparation for naltrexone initiation, or as the detox approach for lower-intensity opioid dependence, the following medical supports are established clinical practice:

Medication/ intervention.	Role	Notes
Clonidine (alpha-2 agonist).	HPA axis suppression — reduces the autonomic storm of opioid withdrawal.	Clonidine directly addresses the norepinephrine surge that produces the most distressing physical symptoms of withdrawal: sweating, rapid heartbeat, elevated blood pressure, anxiety, agitation, and insomnia. Not an opioid — does not produce euphoria or treat all withdrawal symptoms. Most effective for the autonomic component. Requires BP monitoring — can cause significant hypotension.
Loperamide (Imodium)	GI symptom control — diarrhea and cramping.	Standard dose loperamide addresses the GI symptoms of withdrawal effectively. IMPORTANT: High-dose loperamide has been misused for opioid withdrawal management and can produce cardiac arrhythmias and death at excessive doses. Use at standard OTC dosing (2mg per dose, maximum 16mg/day) under medical guidance only.
Ondansetron / Promethazine	Nausea and vomiting control.	Severe nausea is one of the most debilitating withdrawal symptoms. Prescription antiemetics are significantly more effective than over-the-counter options. Ask your physician specifically for nausea management support—it is standard withdrawal management.
NSAIDs (ibuprofen, naproxen)	Muscle aches, joint pain, headache.	Diffuse musculoskeletal pain associated with opioid withdrawal can be treated with NSAIDs. Take with food to protect the stomach lining. Do not use if there is kidney impairment; consult a doctor.
Hydroxyzine (Vistaril)	Anxiety, insomnia, itching.	Antihistaminico non assuefacente con proprietà ansiolitiche e sedative. Utile per l'ansia e i disturbi del sonno durante la sospensione, senza aggiungere il rischio di dipendenza. Spesso prescritto come parte dei protocolli di gestione della sospensione.
Lucemyra (lofexidine)	FDA-approved non-opioid withdrawal management.	Alpha-2 agonist similar to clonidine, specifically FDA-approved for opioid withdrawal symptom management. Less hypotension than clonidine. Limited to withdrawal management — not maintenance treatment. First non-opioid FDA-approved specifically for this indication.

3.3 — The Withdrawal Timeline

Timeline.	Biology.	Symptoms	What to do.
Hours 6–24 (short-acting opioids) / 24–36 hrs (methadone)	Opioïde receptoren tømmes; HPA-aksen begynder at komme sig; en stigning i noradrenalin starter.	Anxiety, yawning, runny nose, tearing, restlessness, early muscle aches.	This is the optimal time for starting Medication-Assisted Treatment (MAT) with buprenorphine, if it's being considered. If managing without MAT, options include clonidine, hydroxyzine, hydration, and warmth. Do not try to manage this alone if other alternatives are available.
Hours 24–72 (peak for most opioids).	Maximum withdrawal intensity; HPA axis in full overdrive; endorphin system fully offline; dopamine system in acute deficit.	Severe muscle aches and cramping, vomiting and diarrhea, goosebumps, sweating and chills, insomnia, extreme anxiety, restless leg, profound dysphoria.	HIGHEST RELAPSE RISK WINDOW. The suffering is extreme, and the body is telling the brain that the solution is one dose away. It is not — it is one dose away from overdose with zero tolerance. Medical supervision, support, and Medication-Assisted Treatment (MAT) consideration are highest priority.
Days 3–10 (post-acute acute)	Fysisk abstinens løses; følelsesmæssige og psykologiske symptomer topper; endorfin- og dopaminsystemer er på laveste niveau.	Profonda depressione, anedonia, sensibilità emotiva, insonnia, lievi sintomi fisici persistenti, forti desideri.	Begin supplement stack in full (Section 4). Exercise as soon as physically capable — even walking. Begin nutrition protocol. Sleep management is critical — poor sleep is the strongest predictor of early relapse in opioid recovery.
Weeks 1–4	Endorphin and dopamine systems are slowly recovering; the HPA axis is normalising; opioid receptors are starting to upregulate.	Gradual improvement with significant variability; PAWS episodes likely; emotional volatility; sleep disruption continues; cravings episodic.	Start building the natural rewards system. Gentle trauma work can begin if the person is stable. Connecting with the community is very important during this time.
Months 1–6	Significant receptor upregulation; dopamine system rebuilding; endorphin system recovering; opioid-induced hyperalgesia	Progressive improvement; genuine moments of natural pleasure returning; cognitive clarity improving; pain sensitivity normalizing towards	This is where the work becomes sustainable rather than purely survival. The natural reward architecture begins to provide genuine relief. Community roots deepen. Identity work becomes possible.

	(amplified pain sensitivity) resolving.	baseline.	
Months 6–18+.	Densité des récepteurs mu-opiacés significativement rétablie ; le système endorphine produit à nouveau du confort naturel et favorise les liens sociaux ; la base de référence de la dopamine est normalisée.	Natural enjoyment, connection, and comfort accessible without chemicals; PAWS episodes rare; episodic cravings contextual rather than constant.	Il recupero completo del sistema degli oppioidi nella maggior parte delle persone avviene entro 12-18 mesi di astinenza prolungata o trattamento farmacologico stabile. La persona che non riusciva nemmeno a immaginare di sentirsi così al primo mese è arrivata.

3.4 — Post-Acute Withdrawal Syndrome in Opioid Recovery.

⚠ Symptome nach der Opioid-Abstinenz können 18–24 Monate anhalten. Bei Fentanyl kann es länger dauern. Das ist keine Schwäche. Es ist Neurobiologie.

PAWS in opioid recovery is characterized by: waves of anxiety and dysphoria, cravings that appear suddenly without obvious triggers, sleep disruption, emotional numbness alternating with emotional flooding, cognitive fog, and pain sensitivity that fluctuates. Episodes can last hours to days and appear weeks or months after the last use.

The OPRM1 genotype affects PAWS severity — A118G carriers may experience more pronounced social pain and loneliness during PAWS episodes because of the endorphin system's role in social bonding. These episodes are not evidence of failure. They are evidence of a brain recalibrating a system that was severely disrupted.

PAWS interrupt protocol: return to Protocol 01 (Shelter) immediately. Contact your MAT provider if on MAT. Contact your support structure. Execute the craving interrupt sequence (Section 5). Increase magnesium and omega-3. Do not be alone with this.

Section 4 — Biological Reconstruction

La ripresa dall'uso di oppioidi richiede la ricostruzione di due sistemi: il sistema degli oppioidi endogeni (endorfine, densità dei recettori mu, capacità di legame sociale) e i danni al sistema dopaminergico secondario. Questi vengono affrontati in parallelo. Le basi della metilazione sono alla base di entrambi.

4.1 — The Methylation Foundation

Same foundation as every guide in this series — but with two opioid-specific additions: (1) MTHFR variants are significantly overrepresented in opioid use disorder; (2) opioid use itself depletes B-vitamins and disrupts methylation cycles, creating a compounding deficit that must be addressed aggressively in early recovery.

Supplement	Dose.	Timing.	Opioïde specifieke aantekeningen.
5-MTHF (L-methylfolate)	400–1000 mcg daily.	Breakfast.	The underlying neurochemical imbalance that opioids were suppressing might be partly due to problems with methylation. 5-MTHF directly supports the production of serotonin, dopamine, and norepinephrine. It often leads to noticeable improvements in mood within 1–2 weeks – sometimes the first clear sign that the body is responding positively to recovery support.
Methylcobalamin (B12)	1000–2000 mcg daily.	Morning, sublingual.	Opioïdes affectent l'intégrité de la myéline avec le temps. La vitamine B12 est essentielle pour la synthèse de la myéline et la réparation du système nerveux. Absorption sublinguale. La réparation neurologique que favorise la vitamine B12 est particulièrement pertinente pour les personnes ayant des antécédents importants de consommation d'opioïdes.
P5P (active B6)	25–50mg	Morning.	Cofactor for dopamine and serotonin synthesis. Opioids deplete B6 through multiple mechanisms. Without P5P, the

			precursor stack below cannot convert to active neurotransmitters regardless of supply.
Magnesium glycinate.	400–600mg elemental	Morning: Evening:	Deficiency in magnesium can worsen pain sensitivity (hyperalgesia), anxiety, sleep disruption, and muscle cramping – all of which are prominent features of opioid withdrawal and PAWS. Opioid-induced hyperalgesia is a documented phenomenon where chronic opioid use paradoxically increases pain sensitivity; magnesium addresses one component of this.
Zinc.	25–30mg daily.	Evening with food.	Zinc modulates NMDA glutamate receptors and is involved in endorphin system function. Opioid use depletes zinc. Zinc deficiency worsens depression, immune function, and wound healing in recovery. Take with food to prevent nausea.

4.2 — Endorphin System Reconstruction

THE CENTURION — Rebuilding the system that provides comfort, connection, and pain tolerance.

The endogenous opioid system cannot be supplemented in the same way that dopamine levels can be supported with precursors. There are no oral endorphin supplements available because these peptides do not cross the blood-brain barrier. What can be done is: provide structural support for receptor upregulation, reduce the inflammatory state that suppresses endorphin production, and — most powerfully — use behaviors and experiences that naturally trigger endorphin release.

Supplement / intervention	Dosage/ approach.	Timing.	Role in endorphin system recovery.
DL-Phenylalanine (DLPA)	500–1500mg daily.	Good morning, skipping the protein today.	DLPA inhibits enkephalinase — the enzyme that breaks down endorphins and enkephalins. By slowing the breakdown of your own endorphins, DLPA extends their duration of action. This is the closest available supplement approach to endorphin system

			support. Particularly useful in the first 3 months when the system is at its lowest. Start at 500mg; assess for stimulating effects.
Omega-3 (DHA + EPA)	3–4g daily, EPA-dominant.	With food, in the morning.	Acidi grassi omega-3 sono componenti strutturali delle membrane in cui sono incorporati i recettori oppioidi. Il DHA supporta la fluidità e la funzione della membrana del recettore. L'EPA ha forti effetti antinfiammatori rilevanti sia per la neuroinfiammazione indotta da oppioidi che per l'iperalgesia indotta da oppioidi. Essenziale nei primi 6 mesi.
NAC (N-Acetylcystein).	600–1800mg daily in divided doses.	Morning and evening with food.	Restores glutamate homeostasis in the nucleus accumbens — the circuit most disrupted by addiction. Multiple clinical trials support NAC for craving reduction across opioid use disorder. Also restores glutathione — the primary antioxidant addressing the oxidative stress of chronic opioid use and withdrawal. Dual-mechanism essential supplement.
Lion's Mane mushroom.	500–1000mg standardized extract daily.	Morning.	Stimulation of NGF (Nerve Growth Factor) supports neuroplasticity and the formation of new neural pathways – which is critical when addiction circuits have been deeply entrenched by chronic opioid use. Rewiring of the 'wanting' circuit requires NGF-driven plasticity. Lion's Mane provides this, along with BDNF support.
Uridin monofosfat (UMP) + DHA + kolin — The Brain Stack.	250–500mg UMP + 1g DHA + 250mg CDP-choline.	Good morning, everyone.	The combination of uridine, DHA, and choline synergistically increases synaptic membrane phospholipids and stimulates D1/D2 receptor synthesis. While developed primarily in the context of dopamine system support, opioid receptor density also benefits from improved neuronal membrane health and phospholipid availability.

Rhodiola rosea	300–600mg (3% rosavins/1% salidroside)	Morning.	Adaptogen with endorphin-modulating properties — may have mild enkephalinase-inhibiting effects alongside MAOI activity. Anti-fatigue, anti-stress, mild mood support. Particularly useful in months 1–4 when the endorphin and dopamine systems are both depleted and the person's energy reserves are low.

4.3 — Pain Management in Opioid Recovery

THE CENTURION — The condition that may have started everything requires its own protocol.

⚠ IF CHRONIC PAIN IS THE UNDERLYING DRIVER OF YOUR OPIOID USE DISORDER, REMOVING THE OPIOID WITHOUT ADDRESSING THE PAIN IS NOT RECOVERY. IT IS SUFFERING WITHOUT STRATEGY.

This is one of the most underaddressed aspects of opioid recovery. Standard addiction treatment focuses on the substance. It frequently neglects the pain — physical or emotional — that made the substance necessary. The result is a person in recovery who is also in unmanaged pain, and who is being told that their only option is to suffer through it.

La posizione del Recovery Kernel: il dolore cronico durante la riabilitazione dall'uso di oppioidi richiede un protocollo di gestione del dolore tanto rigoroso quanto il protocollo di riabilitazione stesso. I seguenti approcci non oppioidi per la gestione del dolore dovrebbero essere discussi con un medico specializzato nella gestione del dolore o con uno specialista in cure palliative:

- Non-opioid medications: SNRIs (duloxetine) and tricyclics (amitriptyline) for neuropathic pain; gabapentinoids for nerve pain (with addiction monitoring); NSAIDs for inflammatory pain; topical agents (lidocaine patches, capsaicin, diclofenac gel) for localized pain.
- Physical modalities: physical therapy, occupational therapy, TENS units, ultrasound therapy, heat and cold therapy, massage, acupuncture (strong evidence for several chronic pain types).
- Mind-body approaches: Mindfulness-Based Stress Reduction (MBSR) has strong evidence for chronic pain and explicitly does not require belief — it changes pain processing neurologically. MBSR also directly addresses the anxiety that amplifies pain perception.
- Movimento como medicina: a relação entre movimento e alívio da dor é documentada e profunda. Mesmo um movimento suave reduz a inflamação, libera endorfinas e diminui a sensibilização central. O Protocolo 03 no Compêndio principal (exercício) não é opcional para dor crônica em recuperação.

- Buprenorphine for pain: Buprenorphine is itself an effective analgesic, meaning that Medication-Assisted Treatment (MAT) and pain management can be addressed simultaneously with the same medication. This is an underutilized option worth explicit discussion with an addiction medicine and pain management physician.

4.4 — Sleep in Opioid Recovery

Opioïdes suppriment le sommeil paradoxal et modifient profondément l'architecture du sommeil. Le sommeil produit par les opioïdes n'était pas réparateur ; c'était une inconscience induite chimiquement qui empêchait le cerveau d'effectuer les processus de maintenance pour lesquels le sommeil existe. En rétablissement, le retour à un sommeil véritable est à la fois un défi et une étape importante.

- Melatonin: 0.5–1mg sublingual, 30–60 minutes before sleep. Low dose. Do not use high doses — they disrupt rather than support natural circadian rhythm.
- Magnesium glycinate: 300–400mg elemental magnesium, taken in the evening. This can help with both sleep and the NMDA-mediated hyperexcitability that disrupts sleep during early opioid recovery.
- Glycine: 3–5g, 30 minutes before bed. Reduces core body temperature; NMDA co-agonist that supports the GABA-glutamate balance disrupted by opioid use; strong sleep quality evidence.
- 5-HTP: 50–100mg in the evening. Supports serotonin synthesis, which converts to melatonin. Opioids deplete serotonin; restoring it can improve both sleep and daytime mood.
- Fosfatidilserina: 100–200 mg por la noche. Reduce el cortisol nocturno; el rebote del eje hipotálamo-hipófisis-adrenal en la recuperación de opioides produce un aumento del cortisol nocturno que impide el inicio del sueño.
- Tart cherry extract: 480mg or 240ml juice, evening. Natural melatonin source with anti-inflammatory properties relevant to opioid-induced inflammation. Supports sleep architecture without suppressing REM.

```text
Protocol 17: Sleep Architecture

**Introduction:**

This protocol outlines the importance of sleep architecture and provides guidance on how to assess and improve it.  Adequate sleep is crucial for physical and mental health, and disruptions to sleep architecture can have significant consequences.

**Understanding Sleep Architecture:**

Sleep architecture refers to the cyclical pattern of different stages of sleep throughout the night. A typical night's sleep consists of multiple cycles, each lasting approximately 90-120 minutes.  Each cycle includes:
```

*   **Stage 1 (NREM 1):** A light stage of sleep where you are easily awakened.
*   **Stage 2 (NREM 2):** A deeper stage of sleep characterized by slower brain waves and occasional bursts of activity called sleep spindles.
*   **Stage 3 (NREM 3):** Also known as slow-wave sleep or deep sleep, this is the most restorative stage of sleep. It's crucial for physical recovery and immune function.
*   **REM Sleep:** Rapid eye movement sleep, characterized by brain activity similar to wakefulness. This is when most dreaming occurs and is important for memory consolidation and emotional processing.

Assessing Sleep Architecture:

Sleep architecture can be assessed through polysomnography (sleep study), which monitors brain waves, heart rate, breathing, and other physiological parameters during sleep. However, a basic assessment can also be made through:

*   **Sleep Diary:** Tracking your sleep patterns for several weeks, including bedtime, wake-up time, total sleep duration, and perceived sleep quality.
*   **Questionnaires:** Standardized questionnaires like the Pittsburgh Sleep Quality Index (PSQI) can help identify potential sleep problems.
*   **Clinical Interview:** A healthcare professional can ask about your sleep habits, medical history, and any symptoms you are experiencing.

Factors Affecting Sleep Architecture:

Several factors can disrupt sleep architecture, including:

*   **Age:** Sleep patterns change with age. Older adults tend to have less deep sleep and more frequent awakenings.
*   **Medical Conditions:** Conditions like sleep apnea, restless legs syndrome, chronic pain, and mental health disorders can interfere with sleep.
*   **Medications:** Certain medications can affect sleep architecture.
*   **Lifestyle Factors:** Caffeine, alcohol, nicotine, irregular sleep schedules, and lack of physical activity can all disrupt sleep.
*   **Stress and Anxiety:** High levels of stress and anxiety can make it difficult to fall asleep and stay asleep.

Improving Sleep Architecture:

Strategies to improve sleep architecture include:

*   **Establish a Regular Sleep Schedule:** Go to bed and wake up at the same time each day, even on weekends.
*   **Create a Relaxing Bedtime Routine:** Engage in calming activities before bed, such as taking a warm bath, reading, or listening to relaxing music.
*   **Optimize Your Sleep Environment:** Make sure your bedroom is dark, quiet, and cool.
*   **Limit Caffeine and Alcohol Intake:** Avoid caffeine and alcohol close to bedtime.

*   **Get Regular Exercise:** Regular physical activity can improve sleep quality, but avoid exercising too close to bedtime.
*   **Manage Stress:** Practice stress-reduction techniques like meditation or yoga.
*   **Consider Cognitive Behavioral Therapy for Insomnia (CBT-I):** CBT-I is a structured program that helps people with insomnia identify and change thoughts and behaviors that interfere with sleep.

When to Seek Professional Help:

If you are experiencing persistent sleep problems, it's important to consult a healthcare professional. They can help determine the underlying cause of your sleep difficulties and recommend appropriate treatment options. Medical help is not failure.
```

## 4.5 — Peptide Support Layer

The following peptides have specific mechanistic relevance to opioid recovery. Physician discussion required – these are research compounds.

| Peptide. | Mechanism in opioid recovery. | Timing. | Notes |
|---|---|---|---|
| BPC-157 | Modulation of the dopamine and serotonin systems; repair of the gut-brain axis; modulation of opioid receptors in animal models; anti-inflammatory properties; promotes tissue healing for injection site damage. | Day 1 onwards — daily | BPC-157 is particularly relevant in opioid recovery for two reasons: (1) it has demonstrated opioid receptor modulation effects — specifically counteracting dopamine system depletion from opioids in animal models; (2) people who used injectable opioids often have significant injection site tissue damage that BPC-157 supports. Oral or subcutaneous. |
| Semax | BDNF and NGF upregulation; cognitive enhancement; dopamine modulation; prefrontal cortex support — specifically the prefrontal circuits that opioids | Weeks 2 onwards. | The prefrontal cortex – the area responsible for decision-making, impulse control, and future planning – is severely affected by chronic opioid use. Semax's BDNF-driven support for the prefrontal cortex directly addresses this issue. The cognitive fog, poor decision-making, and impulsivity that can occur |
```

	suppress.		during early opioid recovery may respond significantly to Semax. Intranasal.
Selank	Ansiolítico que actúa modulando el GABA y la serotonina; reduce la ansiedad sin generar dependencia; se ha sugerido que la modulación de las encefalinas podría estar implicada, según investigaciones.	Weeks 1–8 — as needed; daily if anxiety is the main symptom.	Selank's anxiolytic properties are valuable for the HPA axis rebound anxiety of opioid withdrawal. Its non-addictive profile is particularly important in opioid recovery, where substituting one dependence for another is a documented risk. Intranasal.
Epitalon	Sleep architecture; pineal pathway; telomere protection; circadian rhythm normalization.	Weeks 1–6 — 10-day cycle.	Disturbances in sleep are among the most common and can lead to relapses during opioid recovery—especially after using fentanyl, where these sleep problems might last for several months. Epitalon helps support the pineal gland and the body's natural sleep-wake cycle.
TB-500 (Thymosin Beta-4)	Reparación de tejidos; antiinflamatorio; reduce la fibrosis en los sitios de inyección; promueve la curación del daño venoso causado por el consumo de drogas intravenosas.	Months 1–3 for those with injection-related tissue damage.	For people who used IV opioids, the physical damage — collapsed veins, injection site infections and scarring, endocarditis risk — is significant and underaddressed in standard recovery. TB-500 supports tissue repair and anti-inflammatory processes relevant to this specific damage profile. Physician guidance required.

Section 5 — The Opioid Craving — Understanding and Interrupting.

THE CENTURION — Les envies de consommer des opioïdes sont parmi les événements neurologiques les plus puissants vécus par l'être humain. Elles sont également temporaires.

Craving for opioids typically peaks within approximately 20–30 minutes and then subsides. This is a neurological fact; it has been measured. The craving that feels like it will last forever and consume everything has a biological endpoint. Your only task is to get through the next twenty minutes.

Opioid cravings operate through multiple mechanisms — endorphin-deficit craving (the body missing its pain buffer), dopamine-deficit craving (the reward system seeking any signal), and cue-triggered craving (the most dangerous — environmental triggers that activate the learned response with extreme force).

Cue-Triggered Craving — The Most Dangerous Type

⚠ CUE-TRIGGERED CRAVING IN OPIOID RECOVERY IS NOT THE SAME AS WANTING. IT IS A CONDITIONED NEUROLOGICAL REFLEX. SEEING, SMELLING, OR PASSING THROUGH THE LOCATIONS, PEOPLE, OR SITUATIONS ASSOCIATED WITH USE CAN PRODUCE INSTANTANEOUS, OVERWHELMING CRAVING WITH NO CONSCIOUS DECISION.

This is not a failure of willpower. It is a survival circuit that was trained to fire at maximum intensity. The needle, the spoon, the house, the people, the music — any of these can trigger the full craving response in someone who is otherwise doing well. Environmental redesign (Protocol 05, main Compendium) is not optional in opioid recovery. It is a life-or-death intervention.

THE 5-MINUTE OPIOID CRAVING INTERRUPT — EXECUTE IMMEDIATELY.

1. NAME THE CRAVING TYPE.
   Endorphin-deficit (pain, loneliness, physical discomfort)?
   Dopamine-deficit (flatness, boredom, anhedonia)?
   Cue-triggered (specific trigger just fired)?
   The type changes the response.
2. EXECUTE THE 4-7-8 BREATH. Four full cycles. Now. Not after you finish reading. Now. The parasympathetic response interrupts the automatic quality of the craving-to-action sequence.
3. CHANGE YOUR PHYSICAL LOCATION IMMEDIATELY. If you are near a cue—a person, a place, a situation—leave it. Do not negotiate with the cue. Leave first, process later. Physical distance from the cue environment is not optional.

4. Contact someone: call your MAT provider, your sponsor, your recovery contact, or the 13 11 14 13 11 14. Connection helps reduce cravings. Explain what's happening. You don't need to have a full conversation; just being in touch with another person is important.
5. EXECUTE YOUR ENDORPHIN INTERVENTION. Whatever generates the most endorphin release for you fastest: intense exercise, cold water, physical contact with someone safe, laughter, music at high volume. You are activating the same receptor system through a different door.
6. IF ON MAT: Remember that you took your medication. It is in your system. The craving is a psychological event, not evidence that the medication failed. The medication is working. The craving is the addiction's death throes.
7. Trigger, type, intensity (0–10), action, outcome. Three weeks of this data will show you your pattern with a clarity no therapist can achieve through conversation alone.

Situations with the highest risk of opioid relapse:

* [List]

- Return of tolerance: After any period of abstinence — whether it's treatment, incarceration, or hospitalisation — tolerance is lost. Returning to a previous dosage level can be potentially fatal. Be aware of this possibility *before* it occurs, not when you are already experiencing it.
- Episodios de dolor: los procedimientos dentales, las lesiones, las cirugías y los brotes crónicos de dolor se documentan como desencadenantes de recaídas. Ten un plan de manejo del dolor listo antes de que lo necesites. Habla con cada médico que te atienda sobre tu historial.
- Grief and loss: deaths of loved ones, relationship endings, job losses — major grief events produce endorphin-deficit states that trigger opioid craving specifically and powerfully. Have a grief plan that does not involve isolation.
- Celebration: Surprisingly, positive life events can trigger relapses. The brain's association between opioids and "special occasions" can activate during celebrations, milestones, and successes. Be aware of this in relation to yourself.
- Running out of MAT medication: gaps in MAT due to prescription delays, pharmacy issues, or missed appointments are extremely high-risk periods. Have backup plans for continuity of MAT supply. Missing even one day of buprenorphine or methadone can trigger cravings severe enough to override recovery commitment.

Section 6 — Porting the Addiction: Building Your Own Endorphin System.

THE CENTURION — Centurian Paper C-28 Applied to Opioid Recovery.

The opioid recovery version of the natural addiction architecture has a specific organising principle that differs from other substances in this series: the primary target is endorphin release, not dopamine.

The Warrior constitution seeking stimulation needs competition and intensity. The Sage constitution seeking calm needs creativity and contemplation. The opioid recovery constitution — which does not map as cleanly to a single COMT phenotype because opioid use disorder spans multiple profiles — needs: warmth, safety, connection, physical comfort, and pain tolerance. These are the endorphin system's native outputs. These are what must be built.

Natural Endorphin Release — The Architecture.

Source	Endorphin intensity.	How to access it?	For opioid recovery specifically
Sustained aerobic exercise.	Very High — the "runner's high" is mainly caused by endorphins.	Running, cycling, swimming, rowing — 30+ minutes at a moderate to high intensity.	The runner's high is the closest natural equivalent to an opioid state — warmth, pain relief, emotional calm, and a sense of wellbeing that lasts for hours after exercise. This is the primary endorphin system activation tool. Non-negotiable. Start where you are — even 10 minutes walking — and build. The endorphin release is proportional to intensity and duration.
Contact physique entre des personnes.	High — oxytocin + endorphin co-release.	Safe touch: hugs, handshakes, massage, physical presence with trusted people.	Opioïds activent les circuits de lien social que le contact physique humain active naturellement. En rétablissement, reconstruire la capacité de connexion physique - qui est souvent détruite par la toxicomanie aux opioïdes en raison de l'isolement, de la rupture de confiance et de la honte - n'est pas un luxe. C'est une activation du système des endorphines grâce au

			mécanisme pour lequel ce système a été conçu.
Laughter.	Moderate-High — genuine laughter releases endorphins.	Comedia, absurdismo, juego: programado, no accidental.	Genuine laughter produces documented endorphin release. The opioid user who spent years in the anhedonic flatness of tolerance and withdrawal has often lost access to genuine laughter. Rebuilding the capacity to find things funny is neurological repair, not entertainment.
Music	Moderate — chills from music involve endorphin and dopamine release.	Musik yang menimbulkan sensasi dingin atau respons emosional yang kuat — respons spesifiknya bersifat individual.	The music protocol in the main Compendium (Protocol 12) addresses this in detail. For opioid withdrawal specifically: 60–75 BPM, warm frequencies, ambient and acoustic — the sonic equivalent of comfort and warmth. The music choices evolve as recovery progresses.
Service and helping others.	Moderate-High — sustained; involves endorphin and oxytocin.	Sponsorship, peer recovery support, volunteer work, caring for another person or animal.	The endorphin release from genuinely helping another person is documented and sustained. For opioid recovery populations specifically—who often come from contexts of profound powerlessness—being useful, being needed, and being capable of alleviating someone else's suffering is among the most transformative available experiences. Many long-term opioid recovery successes cite service as the central pillar.
Cold exposure.	High — norepinephrine + endorphin surge followed by sustained calm.	Cold shower (last 60–90 seconds in cold water), cold plunge (2–3 minutes in water below 60°F).	Exposition au froid provoque une réponse de stress contrôlée suivie d'une libération d'endorphines qui dure des heures. Pour quelqu'un dont l'axe HPA a été supprimé par les opioïdes et qui est maintenant en état de suractivité, apprendre à tolérer puis à rechercher un stress contrôlé permet de développer des compétences neurologiques. Commencez par 15 secondes et augmentez progressivement.
Physical accomplishment	Moderate-High —	Milestones in strength training,	The body that was primarily a vehicle for drug delivery needs

and mastery.	achievement -related endorphins + dopamine.	completion of physical challenges, acquisition of physical skills.	to become a source of pride and accomplishment. Physical mastery — getting stronger, learning a martial art, completing a hike, building something with your hands — produces endorphin and dopamine together in the context of bodily agency. This is the opposite of what opioid addiction produced.

The Social Reconnection Architecture.

THE CENTURION — The specific recovery target that opioid use disorder attacks most brutally.

Opioid use disorder destroys social connections with particular ferocity. The drug produces social warmth neurochemically while simultaneously driving behaviors that destroy actual relationships. The result is a person in recovery who is neurochemically primed for connection (because the endorphin system craves it) and socially devastated (because the addiction destroyed it).

Rekindling social connections isn't just a nice-to-have in opioid recovery; it's an intervention that directly impacts the endorphin system. Here's how:

* [List of steps]

- Recovery community:
  * Twelve-step programs, SMART Recovery, peer recovery support groups — these provide immediate access to people who understand the experience without requiring you to explain or justify it.
  * The social bond formed in shared recovery is unique and powerful.
- Reparer le réparable. Protocole 16 (réparation familiale et relationnelle) dans le principal Compendium. Toutes les relations ne peuvent pas être réparées, et toutes ne devraient pas être tentées au début de la guérison. Mais celles qui peuvent l'être — le sont souvent et valent l'effort.
- Construisez progressivement et avec honnêteté. La confiance sociale que la toxicomanie aux opioïdes a détruite ne s'est pas perdue du jour au lendemain. Elle ne reviendra pas du jour au lendemain. Des actions petites mais constantes, sur des mois et des années, reconstruisent ce que la dépendance a détruit. C'est un travail de longue haleine.
- Physical community. Body-based communities—exercise groups, martial arts, hiking clubs, team sports—provide the combination of physical endorphin release and social connection that is the most potent available natural opioid substitute. Both components together are synergistic.

Section 7 — Navigating the Recovery Kernel: Your Protocol Map.

Fase.	Protocols	Primary focus	Opioïde specifieke aantekeningen.
Immediate Safety (Before anything else)	Section 0 of this guide; 000; 13 11 14.	Naloxone access; overdose recognition; fentanyl test strips; Never Use Alone hotline.	This phase precedes the Recovery Kernel framework. The Compendium is of no use to someone who does not survive. Harm reduction is first.
Medical Stabilization (Days 0–14)	MAT provider; medical detox if needed; Protocol 01	MAT initiation or detox management; acute withdrawal survival; safety.	MAT is the bridge. The Recovery Kernel framework runs alongside MAT, not instead of it. Begin supplement stack as soon as tolerated. Protocol 01 (Shelter) for the acute crisis state.
Biological Foundation (Days 1–21)	Protocol 07, Protocol 09, Protocol 17, Protocol 18.	Nutrition, magnesium, thiamine (if alcohol co-use), sleep, gut repair.	DLPA on Day 1 if eating. Magnesium on Day 1. Omega-3 on Day 1. The endorphin system reconstruction begins with the structural raw materials it needs. Begin exercise as soon as physically possible.
Genomic Mapping (Weeks 1–4)	Section 15 (Compendium), Protocol 11	OPRM1 assessment for naloxone guidance, CYP2D6 for medication safety, MTHFR, COMT.	OPRM1 και CYP2D6 είναι οι δύο πιο σημαντικές γενετικές εξετάσεις στην αποκατάσταση από την οπιοειδή – επηρεάζουν άμεσα τόσο την επιλογή της θεραπείας όσο και την ασφάλεια των φαρμάκων. Εάν είναι δυνατόν, κάντε αυτές τις εξετάσεις πριν από τη βελτιστοποίηση της υποβοηθούμενης φαρμακευτικής αγωγής (MAT).
Pain Management (starting from week 1 if pain is a primary concern).	Protocol 14 (Pain Management), consultation with a pain specialist.	Non-opioid pain management; MBSR; physical therapy; buprenorphine for pain.	If pain was the entry point to opioid dependence, it requires its own treatment track running parallel to the recovery track. This is not optional. Unmanaged pain is the most predictable path back to opioid use.
Environmental and Social Architecture (Weeks 2–12)	Protocol 02, Protocol 05, Protocol 08, Protocol 13, Protocol 16	Cue removal, addiction transfer prevention, social architecture, relationship repair.	Environmental redesign is the highest priority in opioid recovery—cue-triggered craving is the primary relapse mechanism. Protocol 05 (environmental redesign) must be executed thoroughly and without

			compromise. People, places, and things associated with use must be addressed.
Trauma Processing (Months 1–6 when stabilised).	Trauma-specific protocols in Volume IV and V; external trauma therapy.	Addressing the underlying trauma that opioids were managing; EMDR or somatic approaches.	Arbete som är specifikt inriktat på trauman bör inte påbörjas förrän personen är biologiskt stabil, har en fungerande substitutionsbehandling om det är lämpligt och har ett stödjande nätverk. Att påbörja traumaarbete för tidigt i opioidåterhämtningen kan destabilisera situationen och leda till återfall. Tidpunkten är viktig.
Identity and Meaning (Months 2–12)	Protocol 20, Protocol 21, C-28.	Identité au-delà de la dépendance ; la personne qui se cache derrière la toxicomanie ; but.	Opioid use disorder often begins in conditions of profound adversity — trauma, chronic pain, poverty, ACEs. The identity that developed alongside the addiction is not the person. Protocol 20 and C-28 address the reconstruction of identity separate from the using history.
The Long Game (Months 6–24+)	Protocol 24, Protocol 25, C-28, C-31	Purpose architecture; social connection fully rebuilt; endorphin system fully operational.	The person in full opioid recovery at 18–24 months, with a functioning MAT regimen or sustained abstinence, a natural endorphin architecture built around exercise and community, and genuine purpose — this person is categorically different from the person who arrived in month 1. This transformation is real. It happens. It is worth the difficulty of getting there.

Section 8 — The Medical Support Layer

La dipendenza da oppioidi ha il trattamento farmacologico più supportato dalla ricerca di qualsiasi disturbo da uso di sostanze. Il divario nel trattamento, ovvero la percentuale di persone che necessitano e potrebbero beneficiare del MAT ma non lo ricevono, è di circa l'80%. Questo divario fa morire le persone. Le informazioni riportate di seguito sono pensate per contribuire a colmare questo divario.

Condições coexistentes que requerem tratamento direto:

- Kronisk smerte: kræver en egen behandlingsplan. Buprenorfin er et smertestillende middel og kan muligvis løse begge problemer samtidigt. Se afsnit 4.3 og protokol 14 i hovedkompendiet.
- Depression: extremely common in opioid use disorder, both as a driver and a consequence. MTHFR-variant depression responds to 5-MTHF. Conventional depression may require SSRIs or SNRIs — CYP2D6 status affects metabolism of most antidepressants. Treat the depression as a separate medical condition, not as a recovery phase that will resolve on its own.
- PTSD and trauma: documented in the majority of people with OUD. Untreated trauma is the most reliable predictor of relapse. Specific trauma treatments (EMDR, CPT, Prolonged Exposure, somatic therapies) have evidence for PTSD in OUD. The timing of trauma treatment matters — stabilization first.
- ADHD: significantly overrepresented in OUD — stimulant use as self-medication for undiagnosed ADHD is a documented pathway. DAT1 and DRD2 variants are relevant. In recovery, non-stimulant ADHD treatments (Strattera, Wellbutrin, Intuniv) are preferred. Stimulant treatment in OUD recovery requires very careful clinical judgment.
- Hepatitis C: blood-borne infection prevalent in IV drug users. Curative treatment now exists (direct-acting antivirals — 95%+ cure rate, 8–12 weeks). Testing and treatment during recovery is standard of care. Curing hepatitis C during recovery improves outcomes and addresses a significant source of ongoing physical illness that complicates recovery.
- HIV: testing and treatment. Undetectable = untransmittable (U=U). Modern HIV treatment does not preclude recovery.

GLP-1 Agonists in Opioid Recovery.

The 2025–2026 data for semaglutide and tirzepatide in opioid use disorder shows preliminary trials demonstrating approximately a 40% reduction in overdose risk as an adjunct to buprenorphine or methadone. This is not a replacement for MAT — it is a potential add-on that reduces the reward signal from opioids through dopamine and reward circuit modulation. Discuss with your addiction medicine physician.

A Final Word.

THE CENTURION — The pain was real. The system that sought to silence it was doing its job. The work now is to address what was underneath.

This guide was written for the person who used opioids not for pleasure but for survival. For the person whose back would not stop hurting, whose nervous system had been wired for terror by things that happened long before the first pill, whose loneliness was a physical ache that the drug was uniquely, powerfully positioned to relieve.

Ce compendium est dédié à ceux qui ont manqué de temps avant que quiconque ne leur ait dit que ce qui les poussait vers la substance était biologique, et non une faiblesse. La crise des opioïdes a causé plus de ces pertes que toute autre addiction dans l'histoire moderne. Plus de 500 000 Américains depuis 1999. Chacun d'eux était une personne qui essayait de gérer quelque chose de réel avec un outil qui les détruisait.

You are reading this because you have not yet run out of time. That is the only fact that matters right now. The biology described in this guide is real and it is recoverable. The endorphin system that went offline comes back online. The mu-opioid receptors that downregulated upregulate again. The dopamine system rebuilds. The pain — physical and existential — can be addressed through means that do not require a substance that will kill you.

Carry your Naloxone. Take your MAT. Call someone when the craving comes. Build the endorphin architecture one day at a time. Get through the next twenty minutes.

The Recovery Kernel was built for exactly this journey. Use it.

— — —

Naloxone: Disponible sin receta en la mayoría de las farmacias estadounidenses. Consíguelo. Dáselo a tus seres queridos.
Never Use Alone Hotline: 1-800-484-3731 | Crisis: 988 | Emergency: 911 | SAMHSA: 1-800-662-4357

Refer to the Recovery Kernel Complete Centurion Compendium for all referenced protocols.
⚠ HARM REDUCTION RESOURCE — NOT MEDICAL ADVICE
How to Recover from Opioids Using the Recovery Kernel | Substance-Specific Navigation Series